

PDP 15 83
READER

IDENTIFICATION

PRODUCT CODE: MAINDEC-15-D2CC-D(D)
PRODUCT NAME: PDP-15 HIGH SPEED READER TEST
DATE REV. OCTOBER 16, 1970
MAINTAINER: DIAGNOSTIC GROUP
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1. ABSTRACT

The PDP-15 High Speed Reader Test verifies the operational status of the reader by performing tests on the reader's control logic and mechanics. The control logic tests include error halts with provisions for looping on any failing test. The mechanical tests provide TTY print-outs in case of error. A test tape is provided for use with the mechanical test. This should be used in lieu of a tape loop, since a loop will not provide proper test operation.

The control logic tests should be run first, and then the mechanical tests (total of 3) must each be manually started by the operator.

2. REQUIREMENTS

Equipment

A standard PDP-15 equipped with a high speed reader.

Storage

The program requires approximately 3250 (octal) locations in field 0.

3. LOADING PROCEDURE

- a. Set the ADDRESS switches to 17700; the BANK MODE switch on a 1.
- b. Press I/O RESET, and then READ-1N.
- c. The program is not self-starting at the completion of loading.

4. STARTING PROCEDURE

Test Tape Generator - 200
Timing Loop for Setup - 250
Control Logic Tests - 300
Out of Tape Test - 1401
Data and IOT tests - 2100
Variable Reader Speed Test - 2400
Read Randomly and Stall Randomly - 2500

The Control Logic Test contains a series of individual tests which are automatically executed by the program. The individual starting addresses may be found after the Table of Error halts appearing in section 6.1.

5. OPERATING PROCEDURE

A test tape is supplied with the program. If a new test tape is desired, a subroutine is included which will punch the necessary patterns. To punch one of the two patterns necessary, use the procedure below. If a new test tape is not needed go on to section 5.1.

- a. Set the ADDRESS switches to 200.
- b. Set the AC switches to indicate the pattern desired.
 - ACS 0 on a 1 = Punch alternate frames of all 1's and 0's.
 - ACS 1 on a 1 = Punch a binary count.
 - ACS 2 on a 1 = Punch all 1's.

c. Press I/O RESET, and then START. The pattern will be punched until PROGRAM STOP is pressed.

If a tape loop is to be made, the pattern must be continued at the splice.

Reader Setup Routine

The use of this routine is intended for Field Service and Production only. Its purpose is to provide a variable delay timing loop to expedite the setup of the reader timing.

A tape with a punched pattern of alternate frames of all 1's and 0's is usually used for the setup procedure. However, the routine will allow any pattern to be used. The Test Tape Generator will punch the required pattern.

- a. Set the ADDRESS switches to 250.
- b. Place the tape in the reader.
- c. Set the ACS to 600000. This will give a stall (delay) of approximately 250 milliseconds.
- d. Press RESET and then START.

The routine reads 16 frames and then stalls; another 16 frames and another stall, etc. The stall time may be varied while the program is running.

Program Operating Procedure

5.1 Control Logic Tests

The test tape supplied contains the necessary test patterns for all control logic tests. The pattern used is an all ones pattern. This pattern is duplicated three times on the test tape even though only one pattern is used. Blank tape separates each pattern. One pass of the control logic tests requires approximately one foot of test tape.

Any errors encountered will cause a program halt. The nature of the error is determined by the address of the halt. The program will not execute the next test until the error is corrected. The halts are tagged, and may be identified from the table of error halts appearing at the end of this document.

- a. Place the test tape in the reader with the punched pattern over the reader's photo cells.
- b. Set the ADDRESS switches to 300, and all ACS equal to 000000.
- c. If an API option is installed, place ACS 6 on a 1.
- d. Press I/O RESET, and then START.

The program will respond with a carriage return and line feed on the KSR-33 teleprinter, and begin Test 1.

Assuming no errors the program will halt with C(PC) = 1401.

The Reader No Tape Test is performed next.

- e. Remove the test tape from the reader.
- f. Set the ADDRESS switches to 1401.
- g. Press I/O RESET, and then START.

Assuming no error halts, the program will halt with C(PC) = 1434.

- h. Place the test tape in the reader and press continue.

Assuming no error halts, the program will halt with C(PC) = 1444

- i. Turn the Reader "OFF LINE" to test for setting the "NO-TAPE" flag.
- j. Press CONTINUE

The data and mechanical tests are performed next.

There are three data/mechanical tests. Each test must be manually started by the operator. All three tests use the same tests tape pattern which is a binary count.

When placing the test tape in the reader, place the punched pattern over the reader's photo cells. This is necessary to enable the program to synchronize properly. When starting any of the three tests sections the program will read the test tape until it finds one frame of all 0's. The program then enters the test sequence.

If an all 0's character cannot be found, the message "CANNOT SYNC" is printed, followed by a halt with C(PC) = 2017 (tagged PRHLT4). Press CONTINUE to try again. Inability to sync may be a result of the lack of an all 0's character, or possibly the reader buffer will not clear.

5.2 Basic Data Checks

This test requires a fan-folded test tape with a punched binary count pattern

- a. Place the test tape in the reader with the punched pattern over the reader's photo cells.
- b. Set the ACS to 000000.
- c. Set the ADDRESS switches to 2100.
- d. Press the I/O RESET, and then START.

The data check test is divided into four parts. A test is first made using RSA and RRB, followed by RSA and RCF. Selecting the reader in binary mode is then done by using RSB and RRB, followed by RSB and RCF. The four parts are designated as A, B, C and D respectively.

Assuming no errors, the program will halt with the PC = 2243. If the test proves error-free go on to paragraph 5.3.

Error Identification

If an error occurs a print-out takes place giving in order, the subtest, what the data being read was expected to be, and the data read from the reader buffer.

The print-out will appear as:

A	GOOD	XXX	BAD	XXX
B	GOOD	XXX	BAD	XXX
C	GOOD	XXXXXX	BAD	XXXXXX
D	GOOD	XXXXXX	BAD	XXXXXX

ACS 0 may be placed up to halt the program when an error occurs. The C(PC) will equal 2125 when halting during Part A, 2161 during part B, and 3012 when halting during Part C or D. Press CONTINUE to read the next frame in sequence.

The Variable Reader Speed Test should be next performed.

5.3 Variable Reader Speed Test

This test requires a fan-fold test tape, with a punched binary count pattern. The reader is selected using the RSA 10T only.

AC switches 2 through 17 control the speed of the reader; the slowest reader speed is obtained with all ACS up, and normal speed with all ACS down. ACS 0 and 1 have no effect on the reading speed.

- a. Place the test tape in the reader with the punched pattern over the reader's photo cells.
- b. Set the ADDRESS switches to 2400.

- c. Press I/O RESET, and then START.

If no errors are indicated, go on to paragraph 5.4.

Error Identification

If an error occurs, a print-out will give in order, what the data read was expected to be, and the data read from the reader buffer. The print-out will appear as:

GOOD XXX BAD XXX

ACS 0 will provide a halt on error when in the up position. The halt will occur with the PC = 2435. Pressing CONTINUE will cause the next frame in sequence to be read.

5.4 Random Read and Stall

This test requires a fan-fold test tape with a punched binary count pattern.

The Random Read and Stall routine reads a random number of frames with a fixed stall time between each frame. After reading the random number of frames the routine reads a random number of frames at full speed. The routine reads a maximum of 14 frames with a stall between each frame, and a maximum of 512 frames at full speed.

ACS Functions for Section 5

<u>ACS</u>	<u>FUNCTION</u>
0	Stop on error (1) Don't stop (0)
1	'Scope mode (1). Ignore errors.

- Place the test tape in the reader with the punched pattern over the reader's photo cells. Set the ADDRESS switches to 2500.
- Press I/O RESET, and then START.
The test will run until stopped by the operator.

Error Identification

A print-out occurs for each detected error. The format is as shown below:

GOOD XXX BAD XXX

The type of error which will occur most frequently with this test will be when the test tape gets out of sync with the program. The bad data will be + 1 count or more of the good data.

After each print-out the program continues on in sequence.

Sub-Routine Abstracts

When starting from address 300, the program performs control logic tests 1 through 7 using the reader IOT RSA. At the completion of test 7, tests 2 through 7 are repeated using reader IOT RSB.

Test 1 - Illegal Instruction

An illegal instruction of 700110 is executed. If an RRB or RCF instruction is executed, the contents of the AC will be changed and an error halt occurs with C(PC) = 316. No tape movement should be observed during this test.

Test 2 - Test for Reader Flag Cleared

An RSF IOT is executed. If the program was started properly by pressing I/O RESET and then START, the flag should be cleared at this point. An error halt with C(PC) = 325 occurs if the flag is set. If this occurs, it maybe the result of I/O power clear not clearing the flag, or the result of tape movement during test 1. Place ACS 1 up, and press CONTINUE to enter scope mode.

Test 3 - Set the Reader Flag and Test for Illegal RSF

Either an RSA or RSB IOT is used to select the reader. The program then stalls for 100 MSEC., after which an illegal conditional skip is attempted using 700110. If the skip occurs, an error halt occurs with C(PC) = 361. If no skip occurs, the reader flag is next tested. An RSF IOT is executed, and if no skip occurs, an error halt with C(PC) = 355, or 356 depending in which mode the reader was selected. Placing ACS1 up and pressing CONTINUE after any error halt, will place the program in scope mode.

Test 4 - Clear the Reader Flag with RRB and RCF

The reader flag is first set with an RSA or RSB IOT and then immediately cleared by executing an RRB. If the test is successful, the flag is again set and then cleared by executing an RCF IOT. If RRB does not clear the flag, an error halt occurs with C(PC) = 423 (RSA), or 424 (RSB). If RCF does not clear the flag, a halt occurs with C(PC) = 430 (RSA) or 431 (RSB). Place ACS1 up, and press CONTINUE to enter scope mode.

Test 5 - Clear the Reader Flag with RSA or RSB

The reader flag is first set using either the RSA or RSB IOT. The reader is again selected and the flag tested for being cleared using the IOT RSP. The flag should be cleared immediately after an RSA or RSB IOT. If not, an error halt occurs with C(PC) = 515 (RSA), or 516 (RSB). Place ACS1 up, and press CONTINUE to enter scope mode.

Test 6 - Interrupt Test

An I/O Power Clear (CAF) is first executed, followed by a 210 MSEC stall. No interrupt should occur at this point. If an interrupt occurs, the I/O status word is tested to determine the device which caused the interrupt. If the reader caused the interrupt, an error halt occurs with C(PC) = 636. A spurious interrupt will cause a halt with C(PC) = 640. The AC will contain the I/O status word at each halt.

If the above test is successful, an attempted program interrupt using either the RSA or RSB IOT is then performed. The reader is selected, and a stall of 100 MSEC is done, waiting for a program interrupt. If no interrupt occurs, a halt with C(PC) = 625 (RSA), or 626 (RSB) occurs. Place ACS1 up and press CONTINUE to enter scope mode.

Test 7 - Reader API Test

Test 7 is performed only if ACS 6 is on a 1 to indicate that an API option is installed. The routine assumes the readers' API channel address to be 50, and API priority level 2.

The first test performed makes certain a reader API break does not occur when the reader flag is 0. An error halt occurs with the PC = 1021 in the event of an API break.

The reader flag is then set by the program, and an API break is attempted. No API break results in an error halt with the PC = 1047. If an API break occurs, the API status word is read and tested for level 2 active. If level 2 is not active, an error halt occurs with the PC = 1056. ACS 1 on a 1 will enable a scope loop for any of the above errors.

Test 8 - Reader No-Tape Test

Test 8 tests the response of the reader logic under no tape conditions. The test tape is first removed from the reader, and the test is started from location 1401. A test is first made to determine whether the no tape indicator has been set by the absence of tape in the reader. If true, the reader flag is then tested to make sure it had been set as a result of the no tape flag. If both tests are successful, the program halts at location 1423, at which point the tape is replaced in the reader.

The TAPE FEED button is then pressed and released. Pressing CONTINUE will cause the program to check for the no tape indicator being reset by TAPE FEED. If all three of the above tests are successful a halt occurs at location 1430.

ERRORS

Error Halts and Descriptions

Error halts and descriptions are given in the tables below for the control Logic Tests.

'Scope mode' may be entered for any single test by placing ACS1 up, and pressing CONTINUE after the error halt. 'Scope mode' may also be entered by restarting the desired test. Restarting addresses are given in the tables immediately following each error halt table.

Table of Error Halts for Control Logic Tests

<u>C(PC)</u>	<u>TAG</u>	<u>TEST#</u>	<u>IDENTIFICATION</u>
316	E01	1	700110 changed contents of the AC.
325	E02	2	Reader flag on illegally
355	EA03	3	Flag wasn't set using RSA
356	EB03	3	Flag wasn't set using RSB If no tape movement: If tape moved:
361	E04	3	Skip occurred using 700110 after an RSA or RSB
423	EA05	4	Flag wasn't cleared using RSA & RRB
424	EB05	4	Flag wasn't cleared using RSB & RRB
430	EA06	4	Flag wasn't cleared using RSA & RCF
431	EB06	4	Flag wasn't cleared using RSB & RCF
515	EA11	5	Flag wasn't cleared using RSA
516	EB11	5	Flag wasn't cleared using RSB

The AC = the data read from the reader buffer after each of the halts EB12 through EA15.

625	EA16	6	No interrupt occurred using RSA - waited 70 MS.
626	EB16	6	No interrupt occurred using RSB - waited 70 MS.
636	E16B	6	Reader caused interrupt when not selected
640	E16C	6	Spurious interrupt
652	E16D	6	Interrupt not from reader AC = I/O status word.
1021	E17	7	An API break occurred with the reader flag cleared.
1047	E18	7	No API break from the reader with the reader flag set.
1056	E19	7	An API break occurred, but priority level 2 is not active. Maybe another device caused the break, or the reader is on the wrong API level.
1401	NOTAPE	8	End of tests 2-7. Set the ADDRESS switches to 1401, and press I/O RESET, and then START to begin test 8.
1412	EA20	8	NO TAPE flag not set.
1421	EA20B	8	Reader flag won't set with the NO-TAPE flag set.
1427	EA20C	8	Reader flag won't clear with the NO-TAPE flag set.
1434	PHLT3	8	Replace tape in the reader and Press Continue.
1442	ERR20D	8	NO-TAPE flag didn't clear.
1444	OFFLINE	8	TURN Reader "off".
1452	ERR20E	8	No-Tape didn't set when the reader was turned off-line
1454	PHLT3A	8	End of the NO-TAPE test

Table of Restarting Addresses to Initiate 'Scope Mode

'Scope mode should normally be initiated by placing ACSI up, and pressing CONTINUE after an error halt. In the event that 'scope mode must be entered by restarting any one test, the starting addresses for tests 1 through 7 are listed in the table below. Tests 3 through 7 use the IOT instructions RSA, RSB, RRB, and RCF, and the starting address for any one test will vary according to which IOT is to be tested. Place ACSI up before restarting.

Test #	'Scope IOT	Operator Action	Restart at Address
1	Illegal IOT	Press I/O RESET, and then START	300
2	RSF	Press I/O RESET, and then START	321
3	RSA	Deposit 700104 into location 333.	331
	RSB	Deposit 700144 into location 333.	331
4	RSA and RRB	Deposit 700104 into location 333.	400
	RSA and RCF	Deposit 700104 into location 333, and 700102 into location 406.	402
	RSB and RRB	Deposit 700144 into location 333.	400
	RSB and RCF	Deposit 700144 into location 333, and 700102 into location 406.	402
5	RSA	Deposit 700104 into location 333.	500
	RSB	Deposit 700144 into location 333.	500
6		Deposit 700104 or 700144 into location 333, to test illegal interrupt; SA =	600
6		To test no interrupt, deposit 700104 or 700144 into location 333. SA =	612

7. RESTRICTIONS

None

8. MISCELLANEOUS

When looping on tests 2-7 the loop time is approximately 5 seconds.

The Basic Data Check tests will take approximately 5 seconds.

The Variable Reader Speed and Random Read tests each run until stopped by the operator with PROGRAM STOP.

Applications

Loop on Tests 2-7 of Section 1

A loop on tests 2-7 may be performed using either the RSA or RSB IOT's. If a test tape loop is to be used make sure the pattern is continued at the splice.

If looping on tests 2-7 using the RSB IOT, make sure channel 8 is continuously punched, and continued at the splice.

To loop on tests 2-7 using RSA, place the test tape in the reader.

1. Set the ADDRESS switches to 317.
2. Place ACS 4 up.
3. Press I/O RESET, and then START.

To loop on tests 2-7 using RSB, place the test tape in the reader.

1. Set the ADDRESS switches to 1074
2. Place ACS 4 up.
3. Press I/O RESET, and then START.

Basic Data Check Applications

'Scope mode for part A, B, C or D of Section 3 may be entered by following the steps below:

- A. Place ACS 1 up, and press CONTINUE if a halt on error occurred, or
- B. Press PROGRAM STOP.
- C. Place ACS 1 up.
- D. Set the ADDRESS switches to:
 - a. 2100 for part A (RSA and RRB)
 - b. 2133 for part B (RSA and RCF)
 - c. 2167 for part C (RSB and RRB)
 - d. 2215 for part D (RSB and RCF)
- E. Press I/O RESET, and then START.

9. PROGRAM DESCRIPTION

Tests 1 through 8 are provided to find catastrophic type failures. The basic functions of the reader logic are first tested, and then as many timing tests as possible are performed. If these tests run the remaining problems will be in the individual data paths.

A provision for looping on tests 2 through 7 is provided.

The Basic Data Check tests are provided to insure that the reader is capable of correctly reading data from tape. All reader IOT's are used during the test.

The Variable Speed and Random Read tests are designed to test the reader's mechanical adjustments by varying the motor speed, and rate of reader selection. The Binary Count portion of the test tape supplied provides the most stringent test. A test tape loop will not provide a satisfactory test, and should be used only during 'scope mode.

10. LISTING

```

        .TITLE HSR15
        /PDP-15 HIGH SPEED READER DIAGNOSTIC - TAPE 1
        /
        .ABS
        /
        /COPYRIGHT OCT, 20, 1970; DIGITAL EQUIPMENT CORP.,
        /MAYNARD, MASS,
        /
        /INTERRUPT ROUTINE

```

00000		.LOC 0	
00000	000000	0	
00001	600001	JMP 1	/INTERRUPT ON ILLEGALLY
00002	777777	LAW -1	
00003	777777	LAW -1	
00004	777777	LAW -1	
00005	777777	LAW -1	
		.EJECT	

/TAPE LOOP GENERATOR

00200		,LOC 200	
00201	750004	BGN1 LAS	/TEST SWITCH REGISTER
00201	740010	RAL	
00202	741400	SZL	
00203	600231	JMP ALT10	/PUNCH 1'S AND 0'S
00204	740010	RAL	
00205	741400	SZL	
00206	600221	JMP PBNCNT	/PUNCH BINARY COUNT
00207	740010	RAL	
00210	741400	SZL	
00211	600264	JMP PSWREG	/PUNCH ALL 1'S
00212	600200	JMP BGN1	
00213	600200	JMP BGN1	

/TAPE PUNCH ROUTINE

00214	000000	PNCHA 0	
00215	700204	PSA	
00216	700201	PSF	
00217	600216	JMP ,=1	
00220	620214	JMP= PNCHA	

/BINARY COUNT

00221	202027	PBNCNT LAC ONE	
00222	100214	JMS PNCHA	
00223	740001	CMA	
00224	100214	JMS PNCHA	
00225	740001	CMA	
00226	342027	TAD ONE	
00227	100214	JMS PNCHA	
00230	600223	JMP PBNCNT+2	

/PUNCH ALTERNATE 1'S AND 0'S

00231	750001	ALT10 CLAICMA	
00232	100214	JMS PNCHA	
00233	740001	CMA	
00234	600232	JMP ,=2	

/LOC 250

00250		SETUP ,LOC 250	
00252	777760	LAW =20	
00251	043030	DAC WORK	
00252	750004	LAS	/AC=600000 = ABOUT 200 MS STALL
00253	043031	DAC WORK1	
00254	700104	RSA	
00255	700101	RSP	
00256	600255	JMP ,=1	
00257	443030	ISZ WORK	/FRAME COUNTER
00260	600254	JMP ,=4	
00261	443031	ISZ WORK1	/STALL
00262	600261	JMP ,=1	
00263	600250	JMP SETUP	
		JECT	

```

/PUNCH ALL ONES
/
00264 777777 PSWREG LAW -1
00265 100214 JMS PNCHA
00266 600215 JMP PNCHA+1
/
/HIGH SPEED PAPER TAPE READER DIAGNOSTIC
/
/PART 1. INSTRUCTION AND CONTROL TESTING
/
00300 .LDC 300
/TEST 1. ILLEGAL INSTRUCTION
/
00300 102551 TST1 JMS CRLF
00301 140013 DCM 13
00302 750001 CLAICMA
00303 700110 700110 /NO IOT BITS, INSTRUCTION
00304 740200 SZA /BIT 14 SHOULD CLEAR AC
00305 600314 JMP RBERR
00306 103002 JMS SCOPE /CHECK FOR SCOPE MODE
00307 600311 JMP ,+2
00310 600301 JMP TST1+1
00311 440013 ISZ 13
00312 600302 JMP TST1+2
00313 600317 JMP TST2+2
00314 103002 JMS SCOPE /ERROR, INFORMATION DELIVERED
00315 740040 E01 HLT /ILLEGALLY
00316 600301 JMP TST1+1
/
/TEST 2. TEST FOR FLAG OFF
/
00317 203015 LAC CKRSA
00320 040333 OAC RSAB
00321 700101 TST2 RSP /FLAG SHOULD BE OFF
00322 600326 JMP OK /SUCCESSFUL TEST
00323 103002 JMS SCOPE /CHECK FOR SCOPE MODE
/FAILURE PATH
/FLAG IS ON ILLEGALLY
00324 740040 E02 HLT
00325 600321 JMP TST2
00326 103002 JMS SCOPE /CHECK FOR SCOPE MODE
00327 600331 JMP TST3 /SUCCESS PATH
00330 600321 JMP TST2
.EJECT

```



```

/
/TEST 3, ILLEGAL RSF TEST AND
/SET FLAG WITH RSA AND RSB
/SKIP ONRSF
/
00331 777763 TST3     LAW -15
00332 040013          DAC 13
/
00333 000000 RSAB     0
00334 102767          JMS STAL70
00335 700110          700110
00336 741000          SKP
00337 600357          JMP SKPERR
00340 700101          RSF          /FLAG SHOULD BE SET
00341 600347          JMP ER3
00342 440013          ISZ 13
00343 600333          JMP RSAB
00344 103002          JMS SCOPE          /SUCCESS PATH
00345 600400          JMP TST4
00346 600333          JMP TST3+2
00347 103002          ER3          JMS SCOPE          /ERROR PATH
00350 741000          SKP
00351 600333          JMP TST3+2
00352 200333          LAC RSAB
00353 543015          SAD CKRSA
00354 740040          EA03          HLT          /FLAG NOT SETTING AFTER RSA
00355 740040          EB03          HLT          /FLAG NOT SETTING AFTER RSB
00356 600331          JMP TST3
00357 103002          SKPERR        JMS SCOPE
00360 740040          E04          HLT          /ILLEGAL RSA OR RSB
00361 600333          JMP RSAB
          .EJECT

```

```

/TEST 4, RESET FLAG WITH RRB AND RCF
,LOC 400
/
00400
00400 203020 TST4 LAC CKRRB
00401 040406 DAC ,+5
00402 400333 XCT RSAB
00403 700101 RSF
00404 600403 JMP ,+1
00405 750000 CLA
00406 000000 0 /RRB OR RCF
00407 043021 DAC STOR1
00410 700101 RSF /CHECK RESET OF FLAG
00411 600432 JMP OK4
00412 103002 JMS SCOPE /ERROR PATH, FLAG STILL ON
00413 741000 SKP
00414 600402 JMP TST4+2
00415 203027 LAC FLAG
00416 740200 SEA /CHECK FOR RRB OR RCF
00417 600425 JMP ,+6 /RCF
00420 200333 LAC RSAB /CHECK FOR RSA OR RSB
00421 543015 SAD CKRSA
00422 740040 EAB5 HLT /ERROR, FLAG STILL SET
/AFTR RRB WITH RSA
/FLAG STILL SET AFTER
/RRB WITH RSB
00423 740040 EBB5 HLT
00424 600402 JMP TST4+2
00425 200333 LAC RSAB
00426 543015 SAD CKRSA
00427 740040 EAB6 HLT /ERROR, FLAG STILL SET
/AFTR RCF WITH RSA
/FLAG STILL SET AFTER
/RCF WITH RSB
00430 740040 EBB6 HLT
00431 600402 JMP TST4+2
00432 103002 JMS SCOPE /SUCCESS PATH
00433 741000 SKP
00434 600402 JMP TST4+2
00435 203027 LAC FLAG
00436 740200 SEA /CHECK FOR RRB OR RCF
00437 600000 JMP TST5
00440 443027 ISZ FLAG /SET FLAG
00441 203017 LAC OKRCF
00442 600401 JMP TST4+1
,EJECT

```

```

/
/TEST 5, RESET FLAG WITH RSA OR RSB
/
00500          .LOC 500
/
00500 143027 TST5    DEM FLAG
00501 400333      XCT RSAB          /RESET FLAG
00502 700101      RSF
00503 600502      JMP ,=1
00504 400333      XCT RSAB          /RESET FLAG
00505 700101      RSF
00506 600517      JMP OK5A
00507 103002      JMS SCOPE          /ERROR, FLAG STILL ON
00510 741000      SKP
00511 600500      JMP TST5
00512 200333      LAC RSAB
00513 543015      SAD CKRSA
00514 740040      EA11 HLT          /DID NOT CLEAR WITH RSA
00515 740040      EB11 HLT          /DID NOT CLEAR WITH RSB
00516 600500      JMP TST5
00517 103002      OK5A JMS SCOPE
00520 741000      SKP
00521 600501      JMP TST5+1
00522 700101      RSF          /WAIT FOR FLAG
00523 600522      JMP ,=1
00524 600600      JMP TST6
          .EJECT

```

```

00000 /TEST 6. INTERRUPT TEST
00000 /
00000 .LOC 600
00000 /
00000 TST6 LAC JMP5
00001 DAC 1
00002 CAF
00003 ION
00004 JMS STAL70 /WAIT FOR ILLEGAL INT
00005 JMS STAL70
00006 JMS STAL70
00007 JMS SCOPE /OK, CHECK FOR SCOPE MODE
00010 SKP
00011 JMP TST6+2 /SCOPE
00012 TSRINT LAC JMP6
00013 DAC 1
00014 ION
00015 XCT RSAB
00016 JMS STAL70 /WAIT FOR INT
00017 JMS SCOPE /ERROR, NO INT
00020 SKP
00021 JMP TSRINT /SCOPE
00022 LAC CKRSA
00023 SLD RSAB
00024 EA16 HLT /NO INT USING RSA
00025 EB16 HLT /NO INT USING RSA
00026 JMP TSRINT
      .EJECT

```

```

/INTERRUPT SERVICE ROUTINE
00627 103002 ILINT JMS SCOPE /CHECK FOR SCOPE MODE
00630 741000 SKP
00631 600602 JMP TST6+2 /SCOPE
00632 700314 IORS /READ I/O STATUS
00633 503160 AND (200000
00634 740200 SEA /SEE IF READER FLAG SET
00635 740040 E16B HLT /READER FLAG SET
00636 700314 IORS
00637 740040 E16C HLT /SPURIOUS INT, AC=I/O STATUS
00640 600602 JMP TST6+2
00641 103002 TSRFLG JMS SCOPE /RETURN FROM INT
00642 741000 SKP
00643 600612 JMP TSRINT /SCOPE
00644 700314 IORS /I/O STATUS
00645 503161 AND (177777
00646 741200 SNA /MAKE SURE READER CAUSED INT.
00647 600653 JMP OK7 /SUCCESS PATH
00650 700314 IORS
00651 740040 E16D HLT /SPURIOUS INT, AC=I/O STATUS
00652 600612 JMP TSRINT
00653 200650 OK7 LAC E16D-1
00654 040001 DAC 1
00655 700002 IOF
00656 601000 JMP TST7
.EJECT

```

```

01000      .LOC 1000
/
/TEST 7, TEST API AND READER
/
TST7      LAS
01001      503162      AND (4000      /TEST ACS 8
01002      741200      SNA
01003      601063      JMP OK8A+4      /NO API PRESENT
01004      703302      CAF
01005      203163      LAC (JMP E17+1      /ERROR PATH
01006      040050      DAC 50      /50 IS READER CHANNEL
01007      754002      LOP8      STL:CLA
01010      740020      RAR
01011      703504      ISA      /TURN ON API
01012      740000      NOP
01013      740000      NOP
01014      103002      JMS SCOPE      /CHECK FOR LOOP
01015      601022      JMP OK8      /NO LOOP
01016      601007      JMP LOP8      /LOOP
/
01017      103002      JMS SCOPE      /COME HERE IF A BREAK
01020      740040      E17      HLT      /ERROR, API FROM READER
/                               /WITH NO READER FLAG.
01021      601007      JMP LOP8
/
/ NOW ATTEMPT AN API BREAK, THE READER SHOULD
/ BRING UP API LEVEL 2 ACTIVE AND BREAK TO 50.
/
OK8      LAW -40
01022      777740      DAC STOR1      /USE AS COUNTER
01023      043021      LAC (37
01024      203164      DAC 10
01025      040010      LAC (HLT
01026      203165      DAC+ 10      /STORE HLT IN LOCS
01027      060010      ISZ STOR1      /40 THRU 77.
01030      443021      JMP ,+2
01031      601027      CAF
01032      703302
/
LOP8A     RSA      /SET READER FLAG
01033      700104      RSP
01034      700101      JMP ,+1
01035      601034      LAC (JMP ROR
01036      203166      DAC 50      /INITIALIZE LOC. 50.
01037      040050      STL:CLA
01040      754002      RAR
01041      740020      ISA      /ENABLE API
01042      703504      NOP
01043      740000      NOP
01044      740000      NOP
01045      740000      E18      HLT
01046      740040      JMP .      /ERROR, NO API BREAK
/                               /FROM READER, PRESS
/                               /CONT, FOR A SCOPE LOOP.
01047      601047      .EJECT

```

```

/
/RETURN HERE FROM CHANNEL ADDRESS 50
/
01050 705512 RDR 705512 /READ PRIORITY LEVELS
01051 503167 AND (20000 /MASK LEVEL 2 BIT
01052 740200 SEA /SHOULDN'T BE 0
01053 601057 JMP OKBA /SUCCESS PATH
01054 103002 JMS SCOPE /CHECK FOR LOOP
01055 740040 E19 HLT /ERROR, READER CAUSED
01056 601033 JMP LOPBA /API BREAK O.K., BUT LEVEL
/2 ACTIVE IS NOT SET.

/
01057 703302 OKBA CAF
01060 103002 JMS SCOPE /CHECK FOR LOOP
01061 741000 SKP /NO LOOP
01062 601033 JMP LOPBA /LOOP

/
01063 750004 LAS
01064 503167 AND (20000
01065 740200 SEA /CHECK TO LOOP TESTS 2-6
01066 601076 JMP RSBLP+2 /LOOP
01067 203016 LAC CKRSB
01070 540333 SAC RSAB
01071 601400 JMP NOTAPE /NEXT TEST
01072 703302 CAF
01073 600320 JMP TST2-1 /DO RSB TEST

/
01074 203016 RSBLP LAC CKRSB /RSB IOT
01075 040333 DAC RSAB
01076 703302 CAF
01077 600321 JMP TST2

/
.EJECT

```

```

01400      /TEST 8, NO TAPE TEST
           ,LOC 1400
01400      /
01400      740040  /NOTAPE HLT /REMOVE TAPE FROM READER
01401      700104      RSA /SELECT READER
01402      761000      LAW 1000
01403      102767      JMS STAL70
01404      700314      IORS
01405      503170      AND (1000
01406      740200      SZA /'NO-TAPE' SHOULD BE SET
01407      601413      JMP OKFLG
01410      103002      JMS SCOPE
01411      740040  EA20 HLT /ERROR, 'NO- TAPE' NOT SET,
01412      601401      JMP NOTAPE+1
01413      700314  OKFLG IORS
01414      740010      RAL
01415      741100      SPA /READER FLAG SHOULD BE SET
01416      601422      JMP TSTRRB
01417      103002      JMS SCOPE
01420      740040  EA20B HLT /ERROR, READER FLAG DIDN'T SET
01421      601401      JMP NOTAPE+1 /WITH 'NO-TAPE' SET
01422      700112  TSTRRB RRB /CLEAR READER FLAG WITH 'RRB'
01423      700101      RSF /DID THE FLAG CLEAR?
01424      601430      JMP RESETA /YES
01425      103002      JMS SCOPE /NO
01426      740040  EA20C HLT /READER FLAG WON'T CLEAR WITH "NO-TAPE" SET,
01427      601422      JMP TSTRRB
01430      700104  RESETA RSA /RESET FLAG
01431      761000      LAW 1000
01432      102767      JMS STAL70
01433      740040  PRHLT3 HLT /REPLACE TAPE IN THE READER
01434      700314      IORS
01435      503170      AND (1000 /MASK 'NO-TAPE' FLAG,
01436      741200      SNA
01437      601443      JMP OFFLINE /OK, FLAG CLEARED
01440      103002      JMS SCOPE
01441      740040  ERR20D HLT /ERROR, 'NO-TAPE' FLAG DIDN'T CLEAR
01442      601434      JMP PRHLT3+1
01443      740040  OFFLINE HLT /TURN READER 'OFF'
01444      700314      IORS
01445      503170      AND (1000
01446      740200      SZA /DID NO-TAPE SET?
01447      601453      JMP PHLT3A /YES, END OF TEST
01450      103002      JMS SCOPE
01451      740040  ERR20E HLT /ERROR, 'NO-TAPE' DIDN'T SET
01452      601444      JMP OFFLINE+1 /WITH READER 'OFF'
01453      740040  PHLT3A HLT /OK, END OF 'NO-TAPE' TEST
           ,EJECT

```


01454 000000
 01455 201502
 01456 543171
 01457 741000
 01460 601470
 01461 203172
 01462 041502
 01463 201501
 01464 744010
 01465 741400
 01466 342027
 01467 041501
 01470 221502
 01471 341501
 01472 061502
 01473 201514
 01474 740020
 01475 361502
 01476 041514
 01477 441502
 01500 621454

01501 123456
 01502 001513
 01503 654321
 01504 361416
 01505 055363
 01506 546060
 01507 243035
 01510 762572
 01511 453237
 01512 150214
 01513 000000
 01514 000000

/

/RANDOM NUMBER GENERATOR
 GENRAN 0

LAC RANDEX
 SAD (RANTBL*10
 SKP
 JMP RANTAD=1
 LAC (RANTBL
 DAC RANDEX
 LAC RANCON
 CLLIRAL
 SEL
 TAD ONE
 DAC RANCON
 LAC* RANDEX
 TAD RANCON
 DAC* RANDEX
 LAC RANSAV
 RAR
 TAD* RANDEX
 DAC RANSAV
 ISZ RANDEX
 JMP* GENRAN

RANTAD

/

RANCON 123456
 RANDEX RANTBL*10
 RANTBL 654321

361416
 055363
 546060
 243035
 762572
 453237
 150214
 0

RANSAV 0

,EJECT

```

      /TAPE LOOP SYNC ROUTINE
      .LOC 2000
02000
      /
      SYNC      2
02000      000000      LAC (-3001
02001      203173      DAC DELAY
02002      042026      RSA          /CHECK FOR SYNC CHAR.
02003      700104      RSF
02004      700101      JMP      -1
02005      602004      RRB
02006      700112      SNA
02007      741200      JMP INSYNC
02010      602020      ISE DELAY
02011      442026      JMP SYNC+3
02012      602003      LAC PRINT3    /TIMED OUT
02013      203061      DAC 11
02014      040011      JMS MSG1
02015      102562
02016      740040      PRHLT4 HLT
02017      602001      JMP SYNC+1
02020      777675      INSYNC      LAW -103
02021      043022      DAC STOR2    /BINARY COUNT RSB
02022      143023      DEM STOR2A   /ALPHA
02023      777776      LAW =2
02024      043025      DAC STOR4
02025      622000      JMP* SYNC
02026      000000      DELAY      0
02027      000001      ONE        1
02030      000377      TH77      377
      .EJECT

```

/PDP-9 HIGH SPEED READER DIAGNOSTIC - TAPE 2

/

/DATA CHECK ROUTINE FOR RSA, RSB AND RCF

/RSA AND RRB

02100

,LDC 2100

/

02100 102000

RSACK

JMS SYNC

02101 760301

LAW 301

02102 043067

DAC INF1+1

02103 202244

LAC BLOCK

02104 043024

DAC STOR3

02105 203041

LAC PRINT1

02106 040011

DAC 11

02107 700104

RSA

02110 700101

RSF

02111 602110

JMP , -1

02112 700112

RRB

/READ A WORD

02113 043021

DAC STOR1

02114 543023

SAD STOR2A

/COMPARE

02115 602125

JMP OKRSA

02116 103002

JMS SCOPE

02117 741000

SKP

02120 602123

JMP , +3

02121 102605

JMS SETUP1

/ERROR

02122 102562

JMS MSG1

02123 103010

JMS ERHLT

02124 740040

HLT

02125 102246

OKRSA

JMS CKTAPE

02126 443024

ISE STOR3

/CHECK FOR END OF BLOCK

02127 602105

JMP RSACK+5

02130 103002

JMS SCOPE

/CHECK FOR SCOPE MODE

02131 602133

JMP RSARCF

02132 602100

JMP RSACK

/SCOPE MODE

,EJECT

```

02133 102000 /RSA AND RCF
02134 760302 RSARCF JMS SYNC
02135 043067 LAW 302
02136 202244 DAC INF1+1
02137 043024 LAC BLOCK
02140 203041 DAC STOR3
02141 040011 LAC PRINT1
02142 700104 DAC 11
02143 700101 RSA
02144 602143 RSF
02145 750000 JMP ,=1
02146 700102 CLA
02147 043021 RCF /READ CHAR.
02150 543023 SAD STOR2A /COMPARE
02151 602161 JMP OKRCF
02152 103002 JMS SCOPE
02153 741000 SKP
02154 602157 JMP ,+3
02155 102605 JMS SETUP1 /ERROR
02156 102562 JMS MSG1
02157 103010 JMS ERHLT
02160 740040 HLT
02161 102246 OKRCF JMS CKTAPE
02162 443024 ISZ STOR3 /CHECK FOR END OF BLOCKS
02163 602140 JMP RSARCF+5
02164 103002 JMS SCOPE
02165 602167 JMP RSBCK
02166 602133 JMP RSARCF
          .EJECT

```

/RSB AND RRB

```

02167 102000  /
02170 760303  RSBCK JMS SYNC
02171 043067  LAW 303
02172 202245  DAC INF1+1
02173 043024  LAC BLOCKA
02174 700144  DAC STOR3
02175 700101  RSB
02176 602175  RSF
02177 700112  JMP ,=-1
02200 043021  RRB
02201 543022  DAC STOR1
02202 602207  SAD STOR2
02203 103002  JMP ,+5
02204 741000  JMS SCOPE
02205 741000  SKP
02206 102654  JMS SETUP3
02207 102246  JMS CKTAPE
02210 443024  ISZ STOR3
02211 602174  JMP RSBCK+5
02212 103002  JMS SCOPE
02213 602215  JMP RSBRCF
02214 602167  JMP RSBCK

```

/READ CHAR,

/COMPARE

/CHECK FOR SCOPE MODE

```

/
/
/RCF AND RSB
/

```

```

02215 102000  RSBRCF JMS SYNC
02216 760304  LAW 304
02217 043067  DAC INF1+1
02220 202245  LAC BLOCKA
02221 043024  DAC STOR3
02222 700144  RSB
02223 700101  RSF
02224 602223  JMP ,=-1
02225 750000  CLA
02226 700102  RCF
02227 043021  DAC STOR1
02230 543022  SAD STOR2
02231 602236  JMP ,+5
02232 103002  JMS SCOPE
02233 741000  SKP
02234 741000  SKP
02235 102654  JMS SETUP3
02236 102246  JMS CKTAPE
02237 443024  ISZ STOR3
02240 602222  JMP RSBRCF+5
02241 103002  JMS SCOPE

```

/SELECT

/READ

/COMPARE

/CHECK FOR SCOPE MODE

.EJECT

PAGE	1)	15H8R	MSR15		
22242	740040	PRHLT5	HLT	/END OF DATA TESTS	
22243	602215		JMP RSBRCF		
22244	777401	BLOCK	777401		
22245	777753	BLOCKA	777753		
		/			
		/			
02246	000000	CKTAPE	0		
02247	203022		LAC STOR2	/COMPLEMENT BINARY	
02250	343174		TAD (747475		
02251	043022		DAC STOR2		
02252	203023		LAC STOR2A	/COMPLEMENT ALPHA	
02253	740001		GMA		
02254	502030		AND TH77		
02255	043023		DAC STOR2A		
02256	443025		ISZ STOR4	/BUMP COUNT IF 0	
02257	622246		JMP* CKTAPE		
02260	203023		LAC STOR2A	/ALPHA MODE	
02261	342027		TAD ONE		
02262	502030		AND TH77		
02263	043023		DAC STOR2A		
02264	777776		LAW =2		
02265	043025		DAC STOR4		
02266	622246		JMP* CKTAPE		
			,EJECT		

02400

02400 102000
 02401 143023
 02402 750004
 02403 503161
 02404 740001
 02405 042543
 02406 442543
 02407 602406
 02410 700104
 02411 700101
 02412 602411
 02413 700112
 02414 543023
 02415 602431
 02416 043021
 02417 103002
 02420 741000
 02421 602431
 02422 102605
 02423 203041
 02424 342027
 02425 040011
 02426 102562
 02427 103010
 02430 740040
 02431 102246
 02432 602402

```

/
/VARIABLE READER SPEED CONTROL4 ACS 2-17 SET SPEED
/
      .LOC 2400
/
VARSPD JMS SYNC
      DEM STOR2A
      LAS           /LOAD ACS
      AND (177777
      CMA
      DAC STLSTR
      ISZ STLSTR    /DELAY
      JMP .-1
      RSA           /READ
      RSP
      JMP .-1
      RRB
      SAD STOR2A    /COMPARE
      JMP VAREND
      DAC STOR1
      JMS SCOPE     /CHECK FOR SCOPE MODE
      SKP
      JMP VAREND
      JMS SETUP1
      LAC PRINT1
      TAD ONE
      DAC 11
      JMS MSG1
      JMS ERHLT     /CHECK FOR HALT ON ERROR
      HLT
VAREND JMS CKTAPE
      JMP VARSPD+2
      .EJECT
  
```

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02500		/RANDOM READ AND STALL	
		.LOC 2500	
		/	
02500	102000	MSKP	JMS SYNC
02501	101454		JMS GENRAN
02502	503175		AND '17
02503	740001		/MAX, OF 17 FRAMES PER BLOCK
02504	042546		CMA
02505	102512		DAC LOOP
02506	442546		JMS READ
02507	602505		ISZ LOOP
02510	703302		JMP ,+2
02511	602501		CAF
			/READ ONE FRAME
			/DONE IF SKIP
			/FIRE THE STOP DELAY
			JMP MSKP+1
			.EJECT


```

02512 000000 /READ AND COMPARE LOOP
02513 700104 READ ?
02514 700101 RSA /READER IN ALPHA
02515 602514 RSF
02516 700112 JMP ,+1
02517 043021 RRB /READ A CHAR,
02520 543023 SAD STOR1 /COMPARE
02521 602534 SAD STOR2A
02522 103002 JMP TAPECK
02523 741000 JMS SCOPE
02524 602534 SKP
02525 102605 JMP TAPECK /INHIBIT PRINT
02526 203041 JMS SETUP1 /BAD
02527 342027 LAC PRINT1
02530 040011 TAD ONE
02531 102562 DAC 11
02532 103010 JMS MSG1
02533 740040 JMS ERHLT
02534 102246 HLT
02535 622512 TAPECK JMS CKTAPE
JMP* READ /CHECK FOR END OF BLOCK

/
/CONSTANTS AND VARIABLES
02536 777736 CON7 =42
02537 000020 CON8 20
02540 000040 CON9 40
02541 000777 LNGLIM 777
02542 777657 M120 =121
02543 777776 M1 =2
02544 777747 M30 =31
02545 000000 STLSTR 0
02546 000000 LOOP 0
02547 000000 LOOPA 0
02550 000260 N260 260
/
02551 000000 CRLF 0
02552 760215 LAW 215
02553 700406 TLS
02554 700401 TSF
02555 602554 JMP ,+1
02556 542560 SAD ,+2
02557 622551 JMP* CRLF
02560 760212 LAW 212
02561 602553 JMP CRLF+2
,EJECT

```

/TTY PRINT ROUTINES

```

02562 000000
02563 220011
02564 700400
02565 343064
02566 740200
02567 741000
02570 602574
02571 700401
02572 602571
02573 602563
02574 777761
02575 043031
02576 770000
02577 043030
02600 443030
02601 602600
02602 443031
02603 602576
02604 622562
MSG1 0
      LAC* 11
      TLS
      TAD END
      SEA
      SKP
      JMP CRWAIT
      TSF
      JMP ,=1
      JMP MSG1+1
      LAW =17
      DAC WORK1
      LAW =10000
      DAC WORK
      ISZ WORK
      JMP ,=1
      ISZ WORK1
      JMP CRWAIT+2
      JMP* MSG1

```

/SETUP1

```

02605 000000
02606 203021
02607 503056
02610 102637
02611 043107
02612 203021
02613 503055
02614 102646
02615 043110
02616 203021
02617 503054
02620 342550
02621 043111
02622 203023
02623 503056
02624 102637
02625 043076
02626 203023
02627 503055
02630 102646
02631 043077
02632 203023
02633 503054
02634 342550
02635 043100
02636 622609
SETUP1 0
      LAC STOR1
      AND MSK3
      JMS ROTAT6
      DAC BAD1
      LAC STOR1
      AND MSK2
      JMS ROTAT3
      DAC BAD1+1
      LAC STOR1
      AND MSK1
      TAD N260
      DAC BAD1+2
      LAC STOR2A
      AND MSK3
      JMS ROTAT6
      DAC GOOD1
      LAC STOR2A
      AND MSK2
      JMS ROTAT3
      DAC GOOD1+1
      LAC STOR2A
      AND MSK1
      TAD N260
      DAC GOOD1+2
      JMP* SETUP1
      EJECT

```

/BAD DATA

02637	000000	ROTAT6	0
02640	742020		RTR; RTR; RTR
02641	742020		
02642	742020		
02643	342550		TAD N260
02644	744000		CLL
02645	622637		JMP* ROTAT6
/			
02646	000000	ROTAT3	0
02647	742020		RTR
02650	740020		RAR
02651	342550		TAD N260
02652	744000		CLL
02653	622646		JMP* ROTAT3
/			
/			
02654	000000	SETUP3	0
02655	203067		LAC INF1+1
02656	700406		TLS
02657	700401		TSP
02660	602657		JMP ,=1
02661	203047		LAC PRINT4
02662	040011		DAC 11
02663	203022		LAC STOR2
02664	043023		DAC STOR2A
02665	102667		JMS ,+2
02666	602701		JMP TYPE1
02667	000000	TYPE2	0
02670	777773		LAW =5
02671	043040		DAC CNTA
02672	220011		LAC* 11
02673	700406		TLS
02674	700401		TSP
02675	602674		JMP ,=1
02676	443040		ISE CNTA
02677	602672		JMP ,=5
02700	622667		JMP* TYPE2
02701	777772	TYPE1	LAW =6
02702	042766		DAC AWAY
02703	203176		LAC (700000)
02704	503022		AND STOR2
02705	744000		CLL
02706	742010		RTL
02707	742010		RTL
02710	342550		TAD N260
02711	042765		DAC TRBLES
02712	203022		LAC STOR2
02713	742010		RTL
02714	740010		RAL
02715	043022		DAC STOR2
02716	102720		JMS TYPE3

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15MSR

MSR15

02720	000000	TYPE3	0
02721	202765		LAC TRBLES
02722	700406		TL5
02723	700401		TSF
02724	602723		JMP ,=1
02725	442766		ISZ AWAY
02726	622720		JMP= TYPE3
02727	777772	TYPE4	LAW =6
02728	042766		DAC AWAY
02731	102667		JMS TYPE2
02732	203176		LAC (700000
02733	503021		AND STOR1
02734	744000		CLL
02735	742010		RTL
02736	742010		RTL
02737	342550		TAD N260
02740	042765		DAC TRBLES
02741	203021		LAC STOR1
02742	742010		RTL
02743	740010		RAL
02744	043021		DAC STOR1
02745	102747		JMS TYPE5
02746	602732		JMP TYPE4+3
02747	000000	TYPE5	0
02750	202765		LAC TRBLES
02751	700406		TL5
02752	700401		TSF
02753	602752		JMP ,=1
02754	442766		ISZ AWAY
02755	622747		JMP= TYPE5
02756	102551		JMS CRLF
02757	203023		LAC STOR2A
02760	043022		DAC STOR2
02761	102747		JMS STAL70
02762	103010		JMS ERHLT
02763	740040		HLT
02764	622654		JMP= SETUP3
02765	000000	TRBLES	0
02766	000000	AWAY	0
			.EJECT

02767	000000	STAL70	0	/70 MS STALL
02770	203001		LAC M6	
02771	043030		DAC WORK	
02772	770000		LAW =10000	
02773	043031		DAC WORK1	
02774	443031		ISZ WORK1	
02775	602774		JMP ,=1	
02776	443030		ISZ WORK	
02777	602772		JMP STAL70+3	
03000	622767		JMP* STAL70	
03001	777771	M6	=7	
		/		
03002	000000	SCOPE	0	
03003	750004		LAS	/CHECK FOR SCOPE MODE
03004	742010		RTL	
03005	741400		SZL	
03006	443002		ISZ SCOPE	/YES, SCOPE MODE
03007	623002		JMP* SCOPE	
		/		
03010	000000	ERHLT	0	/CHECK FOR HALT ON ERROR
03011	750004		LAS	
03012	740100		SMA	
03013	443010		ISZ ERHLT	/NO HALT
03014	623010		JMP* ERHLT	
			EJECT	

/CONSTANTS, VARIABLES ETC.

03015	700104	CKRSA	700104	/RSA 10T
03016	700144	CKRSB	700144	/RSB 10T
03017	700102	CKRCF	700102	/RCF 10T
03020	700112	CKRRB	700112	/RRB 10T
/				
03021	000000	STOR1	0	/THESE NEXT 6 FOR
03022	000000	STOR2	0	/DATA WORD STORAGE
03023	000000	STOR2A	0	
03024	000000	STOR3	0	
03025	000000	STOR4	0	
03026	000000	STOR5	0	
03027	000000	FLAG	0	/RSA, RSB FLAG
03030	000000	WORK	0	/THESE 3USED
03031	000000	WORK1	0	/IN TIMING LOOPS
03032	000000	WORK2	0	
/				
03033	776527	CON1	=1751	/THESE FOUR USED
03034	776544	CON3	=1234	/IN TIMING LOOPS
03035	771623	CON5	=6155	
03036	003777	CON6	3777	
/				
03037	000000	COUNTA	0	
03040	000000	CNTA	0	
03041	003066	PRINT1	INF1	
03042	000000	BLSTOR	0	/BLOCK LENGTH
03043	000000	CHACNT	0	/CHARACTER COUNTER
03044	000000	CNTEN	0	/COUNT OF TEN
03045	000000	STORLM	0	/ERROR COUNT
03046	000000	LASTAL	0	/LAST STALL TIME
03047	003132	PRINT4	INF4	
/				
03050	760301	A	760301	/TTY CHAR. A
03051	760302	B	760302	/DITTO B
03052	760303	C	760303	/DITTO C
03053	760304	D	760304	/DITTO D
03054	000007	MSK1	7	
03055	000070	MSK2	70	
03056	000300	MSK3	300	
03057	000700	MSK4	700	
03060	007000	MSK5	7000	
03061	003114	PRINT3	INF3	
03062	003143	PRINT5	INF5	
03063	600027	JMP5	JMP ILINT	
03064	777563	END	777563	
03065	600041	JMP6	JMP TSRFLG	
				.EJECT

/TTY PRINT ROUTINES

03066	000000	INF1	0	
03067	000000		2	/A,B,C, OR D
03070	000240		240	/SPACE
03071	000307		307	/G
03072	000317		317	/O
03073	000317		317	/O
03074	000304		304	/D
03075	000240		240	/SPACE
03076	000330	GOOD1	330	/X
03077	000330		330	/X
03100	000330		330	/X
03101	000240		240	/SPACE
03102	000240		240	/SPACE
03103	000302		302	/B
03104	000301		301	/A
03105	000304		304	/D
03106	000240		240	/SPACE
03107	000330	BA01	330	/X
03110	000330		330	/X
03111	000330		330	/X
03112	000212		212	/LF
03113	000215		215	/CR
/				
03114	000000	INF3	0	
03115	000303		303	/C
03116	000301		301	/A
03117	000316		316	/N
03120	000316		316	/N
03121	000317		317	/O
03122	000324		324	/T
03123	000240		240	/SPACE
03124	000323		323	/S
03125	000331		331	/Y
03126	000316		316	/N
03127	000303		303	/C
03130	000212		212	/LF
03131	000215		215	/CR

,EJECT

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03132	000000	INF4	0	
03133	000307		307	/G
03134	000317		317	/O
03135	000317		317	/O
03136	000304		304	/D
03137	000240		240	/SPACE
03140	000240		240	/SPACE
03141	000302		302	/B
03142	000301		301	/A
03143	000304		304	/D
03144	000240		240	/SPACE

03145	000000	INF5	0	
03146	000000		0	/X
03147	000000		0	/X
03150	000000		0	/X
03151	000257		257	/SLASH
03152	000323		323	/S
03153	000305		305	/E
03154	000303		303	/C
03155	000240		240	/SPACE
03156	000212		212	/LF
03157	000215		215	/CR

000000 ,END

03160	200000	*L
03161	177777	*L
03162	004000	*L
03163	001017	*L
03164	000037	*L
03165	740040	*L
03166	001000	*L
03167	020000	*L
03170	001000	*L
03171	001013	*L
03172	001003	*L
03173	774777	*L
03174	747475	*L
03175	000017	*L
03176	700000	*L

SIZE=03177

NO ERROR LINES